

CLAIMS

What is claimed is:

1. A trigger generator for supplying a trigger signal to a medical device, the trigger generator comprising:
- a respiratory signal device associated with the subject that generates a respiratory signal representing the flow of gas into and out of the subject's lungs during the subject's breathing cycle; and
 - a trigger generator that integrates the respiratory signal and generates a trigger signal when the integrated respiratory signal has a value representing a selected point in the subject's breathing cycle.
2. The trigger generator of claim 1, wherein the trigger generator comprises:
- an integrator that integrates the respiratory signal and generates a corresponding integrated respiratory signal; and
 - a trigger level detector that compares the integrated respiratory signal with a trigger level and generates the trigger signal when the integrated respiratory signal equals the trigger level.
3. The trigger generator of claim 2, wherein the trigger level detector further comprises:
- a trigger level source for generating the trigger level representing the selected point in the subject's breathing cycle.
4. A method for triggering operation of a medical system at a selected point in a subject's breathing cycle, the method comprising the steps of:
- receiving a respiratory signal representing the flow of gas into and out of the subject's lungs during the subject's breathing cycle;
 - integrating the respiratory signal to create an integrated respiratory signal; and

6 triggering the medical device when the integrated respiratory signal has a value
7 corresponding to a selected point in the subject's breathing cycle.

1 5. The method of claim 4, wherein the steps of triggering the medical device comprises
2 the steps of:

3 receiving the integrated respiratory signal;
4 receiving a trigger level representing a value corresponding to selected point in the
5 subject's breathing cycle as described by an integrated signal;
6 comparing the integrated respiratory signal and the trigger level; and
7 generating the trigger signal when the integrated respiratory signal corresponds to the
8 trigger value.

1 6. The method of claim 5, wherein the step of comparing the integrated respiratory
2 signal and the trigger level signal comprises the step of setting a value to be represented by
3 the trigger value.

1 7. A trigger generator for supplying a triggering to a medical device, the trigger
2 generator comprising:
3 respiratory signal means associated with the subject for generating a respiratory signal
4 representing the flow of gas into and out of the subject's lungs during the subject's breathing
5 cycle; and

6 trigger generator means for integrating the respiratory signal and generating a trigger
7 signal when the integrated respiratory signal has a value representing a selected point in the
8 subject's breathing cycle.

1 8. A medical data acquisition system comprising:
2 a medical data system that acquires a set of data from a subject based on a trigger
3 signal;

4 a respiratory signal device associated with the subject that generates a respiratory
5 signal representing the flow of gas into and out of the subject's lungs during the subject's
6 breathing cycle; and

7 a trigger generator that integrates the respiratory signal and generates the trigger
8 signal when the integrated respiratory signal has a value representing a selected point in the
9 subject's breathing cycle.

1 9. The medical data acquisition system, as set forth in claim 8, wherein the value
2 representing a selected point in the subject's breathing cycle is selected to correspond to a
3 point in the cycle where the motion of the lungs is at a minimum.

1 10. The medical data acquisition system, as set forth in claim 8, wherein the medical data
2 system is an ultrasound system.

1 11. The medical data acquisition system, as set forth in claim 8, wherein the medical data
2 system is a tomographic system.

1 12. The medical data acquisition system, as set forth in claim 8, wherein the medical data
2 system is a MRI system.

1 13. The medical data acquisition system, as set forth in claim 8, wherein the respiratory
2 signal device outputs a digital value and the trigger generator comprises a processor
3 configured to integrate the respiratory signal and cause the output of the trigger signal.

1 14. A trigger generator for supplying a trigger signal to a medical device based on a
2 respiratory signal representing the flow of gas into and out of the subject's lungs during the
3 subject's breathing cycle, the trigger generator comprising:

4 an integrator that integrates the respiratory signal and generates a corresponding
5 integrated respiratory signal;

6 a trigger level source that outputs a trigger level representing the selected point in the
7 subject's breathing cycle; and

8 a trigger level detector that compares the integrated respiratory signal and the trigger
9 level and generates the trigger signal when the integrated respiratory signal enters into a
10 predetermined relationship with the trigger level.

1 15. A trigger generator for supplying a trigger signal to a medical device, the trigger
2 generator comprising:

3 a respiratory signal device associated with the subject that generates a respiratory
4 signal representing the flow of gas into and out of the subject's lungs during the subject's
5 breathing cycle; and

6 a trigger generator that calculates a differential of the respiratory signal and generates
7 a trigger signal when the differential has a value representing a selected point in the subject's
8 breathing cycle.